

REMARKS

Claims 9-10, 12-14 and 23-28 are pending in the present application. Claims 9-14 and 23-28 stand rejected under 35 U.S.C. §112, second paragraph for indefiniteness. Claim 9 stands rejected under 35 U.S.C. §102 (b) for anticipation by, or in the alternative, under 35 U.S.C. §103 (a) for obviousness over U.S. Patent No. 4,975,221 to Chen et al. Claims 10, 14 and 23-28 stand rejected for obviousness over Chen. Claims 11-12 stand rejected for obviousness over Chen in view of U.S. Patent No. 5,843,251 to Tsukagoshi et al. Claims 9-14 and 23-28 stand rejected for obviousness over allegedly admitted prior art in view of Tsukagoshi.

Applicant respectfully traverses the rejections and urges allowance of the present application.

Independent claim 9 recites a method of conductively interconnecting electronic components comprising, in part, providing a curable adhesive composition comprising an epoxy terminated silane comprising a glycidoxyl methoxy silane. Claim 9 recites patentable subject matter over the prior art of record.

Referring to page 5, paragraph 8, of the Office Action, it is correctly stated that Chen is silent towards the type of silane utilized as an adhesion promoter. It is stated in the Office Action that it would have been obvious to utilize a known silane adhesion promoter in the epoxy adhesive in the method of Chen. Applicant disagrees with the rejection.

Referring to MPEP §2143.01 (8th ed.), there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine reference teachings. The mere fact

that references can be combined or modified does not render the resultant combination obvious *unless prior art also suggests the desirability of the combination or modification.* Obviousness cannot be established by a combination of references unless there is some motivation in the art to support the combination. See *ACH Hospital Systems, In. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984) ("Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination."). The motivation for forming the combination must be something other than hindsight reconstruction based on using Applicant's invention as a road map for such a combination. See e.g., *Interconnect Planning Corp. v. Feil*, 227 USPQ 543,551 (Fed. Cir. 1985); *In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990) (explaining that hindsight reconstruction is an improper basis for rejection of a claim).

The Office Action is devoid of any alleged motivation to combine the teachings of Tsukagoshi with the teachings of Chen in support of the obviousness rejection of previous claim 11 which limitations have been incorporated into claim 9. As set forth in MPEP §2143.01 (8th ed.), a statement that modifications of the prior art to meet the claimed invention would have been well within the ordinary skill of the art at the time the claimed invention was made because references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facia* case of obviousness without some objective reason to combine the teachings of the references.

In accordance with the above, a proper motivational rationale for a combination of art provides that impetus necessary to cause one of skill in the art to combine the

teachings of the references to make the proposed modification. *Ex parte Levengood*, 28 USPQ2d 1300, 1301 fn. 2 (Bd. Pat. App. and Inter. 1993). The Office Action fails to provide any alleged motivation let alone a requisite motivation providing the impetus necessary to cause one of skill in the art to combine the teachings of the references in support of the proposed modification. There is absolutely no motivation to combine the teachings of Tsukagoshi with the teachings of Chen and claim 9 recites patentable subject matter over the prior art of record in the absence of the proper motivation.

Furthermore, one of ordinary skill in the art would not be motivated to combine the teachings of Tsukagoshi with the teachings of Chen. Referring to the teachings in column 4, lines 1-5 of Chen, it is stated that the adhesives may include desired ingredients such as adhesion promoters including epoxy functional silanes. According to the teachings in column 11, lines 1-11 of Chen, silanes are identified as coupling agents to provide improvement of adhesiveness of circuits. As set forth in the identified teachings of Chen, silanes have already been identified as suitable adhesion promoters. Accordingly, one of skill in the art presented with the teachings of Chen would not look to Tsukagoshi for meaningful adhesion teachings inasmuch as Chen already discloses suitable adhesion promoters include epoxy functional silanes. The redundancy of teachings clearly demonstrates there is no impetus for one of skill in the art to modify the Chen teachings with the teachings of Tsukagoshi. There is absolutely no motivation to combine the teachings of Tsukagoshi with the teachings of Chen and claim 9 is allowable over the prior art of record for at least this reason.

In addition, one of skill in the art would not look to combine the inapposite teachings

of Tsukagoshi with the teachings of Chen. Tsukagoshi clearly relates to insulating adhesives as set forth in col. 3, lines 30-32. To the contrary, Chen relates to adhesives containing electrically conductive fillers as set forth in col. 3, lines 61-62. One of skill in the art concerned with electrically conductive adhesives would not look to the inapposite teachings of Tsukagoshi concerning insulating adhesives for meaningful teachings, especially when Chen already discloses suitable adhesive promoters. Without inappropriate utilization of Applicant's disclosure as a roadmap, there is absolutely no motivation to combine the inapposite teachings of Tsukagoshi with the teachings of Chen and claim 9 is allowable over the prior art for at least this reason.

Referring to paragraph 9 on page 5 of the Office Action, previously pending claim 11 was rejected over allegedly admitted prior art referring to the specification at page 1, lines 17-22. Applicant disagrees with the rejection set forth in paragraph 9. In particular, Applicant respectfully submits the Examiner is mistaken and the statements in page 1, lines 17-22 are not admitted prior art. A careful read of the specification reveals that page 1, lines 17-22 fall under the "Background of the Invention" section and there is absolutely no admission that such statements are in fact prior art. The Office Action is devoid of any details of how such could be fairly considered as admitted prior art. The statements identified in the Office Action are not admitted prior art and the rejection is improper for at least this compelling reason.

This obviousness rejection of claim 9 over the allegedly admitted prior art is also faulty inasmuch as there is absolutely no motivation to combine the teachings of Tsukagoshi with the allegedly admitted prior art in support of the rejection. Page 6 of the

Office Action states that one of skill in the art would have readily appreciated utilizing known techniques to increase bonding strength of electrical components such as adding a silane coupling agent to an epoxy as an adhesion promoter and that adding a silane coupling agent to an epoxy creates an epoxy terminated silane. Such rationale is devoid of any objective evidence in support of the combination of the reference teachings as required for a proper obviousness rejection. Claim 9 is allowable over the prior art of record for at least this additional reason.

The claims which depend from independent claim 9 are in condition for allowance for the reasons discussed above with respect to the independent claim as well as for their own respective features which are neither shown nor suggested by the cited art.

Independent claim 23 recites a method of conductively interconnecting electronic components comprising, in part, curing an epoxy into an electrically conductive bond electrically interconnecting first and second components, and the epoxy having an effective metal surface wetting concentration of silane to form a cured electrical interconnection having a contact resistance through a metal surface of less than or equal to about 0.3 ohm-cm². Claim 23 recites patentable subject matter over the prior art of record.

Page 4 of the Office Action states that Chen is silent towards contact resistance. Thereafter, it is stated that one of skill in the art would have readily appreciated that only expected results would be achieved by adding a silane coupling agent to an electrically conductive epoxy adhesive, such as changing the contact resistance. It is further stated that one of skill would be expected to know the desirable contact resistance and to appropriately adjust the adhesive utilized in order to achieve an acceptable contact

resistance, such as adjusting metal surface wetting concentration of silane in the epoxy. It is further stated that it would have been obvious to one of ordinary skill in the art to have an effective metal surface wetting concentration of silane in the adhesive to obtain the desired contact resistance in Chen. Applicant disagrees.

Chen specifically recites utilization of silane as an adhesion promoter and provides absolutely no teachings regarding concentrations of silane or how such would impact contact resistances. Applicant has electronically searched Chen and have failed to uncover any teachings regarding contact resistance or wetting concentration let alone teachings regarding an effective metal surface wetting concentration of silane to form the interconnection having a contact resistance of a given range. Further, Chen fails to provide any range of contact resistances let alone the specific claimed contact resistance of less than or equal to about 0.3 ohm-cm². One of skill in the art would not be motivated from the teachings of Chen to adjust concentrations of silane to provide desired contact resistances but would rather use silane for adhesion as set forth in Chen. Numerous limitations of claim 23 are not shown or suggested by the prior art of record and claim 23 is allowable for at least this reason.

Further, MPEP §2143.01 recites *In re Ratti*, 270 F. 2d 810, 123 USPQ 349 (CCPA 1959) wherein the court reversed a rejection stating that the 103 rejection was improper because the suggested combination of references would require *substantial reconstruction and redesign* of the element shown in the primary reference as well as a change in the basic principle under which the primary reference construction was designed to operate. Any modification of Chen would be substantial (analogous to *Ratti*) and such illustrates the

non-obviousness of claim 23 and the rejection is in error. Applicant requests allowance of claim 23 for at least this additional reason.

Chen is absolutely devoid of disclosing or suggesting providing epoxy having an effective metal surface wetting concentration of silane to form a cured electrical interconnection having a contact resistance through said metal surface of less than or equal to any contact resistance values let alone less than or equal to about 0.3 ohm-cm² as specifically defined in claim 23. Claim 23 recites limitations not shown or suggested in the prior art of record and claim 23 is allowable over Chen for at least this reason.

Referring to the rejection of claim 23 as set forth in paragraph 9 on page 5 of the Office Action, the Examiner has provided no evidence that the statements of page 1, lines 17-22 of the specification regarding the Background of the Invention are prior art. Applicant has never admitted such statements are prior art and the Examiner has failed to produce any evidence that such statements are in fact prior art. The 103 rejection of claim 23 over the allegedly admitted prior art is improper for at least this reason. Further, there is absolutely no motivation to combine the teachings of Tsukagoshi with such allegedly admitted prior art. The obviousness rejection of claim 23 is improper for at least these compelling reasons and Applicant respectfully requests allowance of claim 23.

The claims which depend from independent claim 23 are in condition for allowance for the reasons discussed above with respect to the independent claim as well as for their own respective features which are neither shown nor suggested by the cited art.

For example, claim 28 recites the metal surface comprises nickel over which the curable adhesive composition is received. On page 4 of the Office Action, it is stated that

it would have been readily appreciated that electronic components with nickel containing metal are well known and conventional and that Chen are a general teaching for interconnecting electronic parts and it would have been obvious to connect an electrical component with a nickel containing metal surface to another electrical component in the method of Chen. Applicant disagrees.

Nickel is widely understood as not being readily wettable by most materials. Applicant's claim 28 defining the metal surface comprising nickel and the epoxy having an effective metal surface wetting concentration of silane to form a cured electrical interconnection having a contact resistance through said metal surface of less than or equal to about 0.3 ohm-cm² is unexpected and is not shown or suggested in Chen. The absence of a property which a claimed invention would have been expected to possess based upon the teachings of the prior art (e.g., nickel not being readily wettable) is evidence of non-obviousness as set forth in MPEP §716.02 *citing Ex Parte Mead Johnson and Company*, 227 USPQ 78 (Bd. Pat. App. & Inter. 1985). Claim 28 recites limitations not shown or suggested in the prior art and claim 28 is patentable subject matter for at least this additional reason.

Numerous claimed limitations are not shown or suggested by any of the prior art references of record. Pursuant to MPEP §2144.03, Applicant respectfully requests that the Examiner submit an affidavit or cite a reference in support of his or her position rejecting claims including limitations not shown or suggested in the prior art if the claims are not found to be allowable in the next Action. The Examiner is reminded that the facts constituting the state of the art are normally subject to the possibility of rationale

disagreement among reasonable men. See *In re Eynde*, 480F.2d 1364, 1370, 178 USPQ 470, 474 (CCPA 1973).

Referring to the indefiniteness rejections, Applicant submits such claims are indeed definite and fully in compliance with 35 U.S.C. §112. The Examiner states the claims are indefinite because it is unclear whether or not the adhesive is to be electrically conductive. The indefiniteness rejection is in error.

Initially, claim 23 does not recite adhesive and accordingly can not be considered indefinite for the reasons set forth in the Action. 35 U.S.C. §112, second paragraph, requires that the claims particularly point out and distinctly claim the subject matter that *the patent applicant regards as their invention*. "Distinctly" has been interpreted to mean simply that the claim must have a clear and definite meaning when construed in the light of the complete patent document. *Standard Oil Company v. American Cyanamid Company*, 774 F.2d 448, 227 USPQ 293 (Fed. Cir. 1985). Further, the definiteness of the claim language employed must not be analyzed in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one of having ordinary skill in the pertinent art. Applicant submits such language is clearly understandable by one of skill in the art, and definite in light of and well supported by the originally filed specification. One skilled in the art would have no problem understanding the pending claims. Such claims are certainly definite when the specification and claims are read as a whole.

Further, Applicant in such claims has particularly pointed out and distinctly claimed the subject matter which the Applicant regards as his invention in accordance with 35

U.S.C. §112, second paragraph. Interjecting the language suggested in the Office Action or other language denies Applicant the right under 112 to distinctly claim what he regards to be the invention when such terms are clearly definite and understood by one of ordinary skill in the art. The indefiniteness rejection of the pending claims is improper and Applicant respectfully request withdrawal of the rejection.

Applicant respectfully requests allowance of all pending claims.

The Examiner is requested to phone the undersigned if the Examiner believes such would facilitate prosecution of the present application. The undersigned is available for telephone consultation at any time during normal business hours (Pacific Time Zone).

Respectfully submitted,

Dated: 4/19/02

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Application Serial No. 09/480,076
Filing Date January 10, 2000
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Group Art Unit 1733
Examiner J. Haran
Attorney's Docket No. MI40-274
Title: "Method of Conductively Interconnecting Electronic Components, Battery Powerable Apparatus, Radio Frequency Communication Device, and Electric Circuit"

VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING
RESPONSE TO DECEMBER 19, 2001 OFFICE ACTION

In the Specification

The replacement specification paragraphs incorporate the following amendments.

Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

The paragraph beginning at line 1 on page 1 has been amended as follows:

-RELATED PATENT DATA

This patent resulted from a divisional application of U.S. Patent Application Serial No. 09/022,812, filed February 12, 1998, entitled "Thin Profile Battery Bonding Method and Method of Conductively Interconnecting Electronic Components" (As Amended), naming Rickie C. Lake as inventor, and which is now U.S. Patent No. 6,030,423, which issued February 29, 2000, the disclosure of which is incorporated by reference.--.

In the Claims

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

9. (Amended) A method of conductively interconnecting electronic components comprising:

providing a curable adhesive composition comprising an epoxy terminated silane comprising a glycidoxymethoxy silane;

providing first and second electronic components to be conductively connected with one another;

interposing the curable adhesive composition between the first and second electronic components; and

curing the adhesive into an electrically conductive bond electrically interconnecting the first and second components.

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